

### **REMARKS/ARGUMENTS**

Favorable reconsideration of this application, as presently amended and in light of the following discussion, is respectfully requested.

Claims 1-15 are presently active. Claim 1 has been presently amended. No new matter has been added.

In the outstanding Office Action, Claims 1, 3, 8, 9, 10, 11, 12, and 15 were rejected under 35 U.S.C. § 102(b) as being anticipated by Shiomi et al. (U.S. Pat. No. 5,844,252). Claims 1, 2, 8, 11, 12, 13, 14, and 15 were rejected under 35 U.S.C. § 102(b) as being anticipated by Yamazaki (U.S. Pat. No. 5,089,802). Claims 2, 4, 13, and 14 were rejected under 35 U.S.C. § 103(a) as being obvious over Shiomi in view of Yamazaki. Claims 5 and 6 were rejected under 35 U.S.C. § 103(a) as being obvious over Shiomi et al. and Yamazaki et al. in view of Malinski et al. (U.S. Pat. No. 5,603,820). Claim 7 was rejected under 35 U.S.C. § 103(a) as being obvious over Shiomi et al. and Malinski et al. in view of Buttery et al. (U.S. Pat. No. 5,405,618). Claims 3, 4, 9, and 10 were rejected under 35 U.S.C. § 103(a) as being obvious over Yamazaki in view of Shiomi et al. Claims 5 and 6 were rejected under 35 U.S.C. § 103(a) as being obvious over Yamazaki and Shiomi et al. in view of Malinski et al. Claim 7 was rejected under 35 U.S.C. § 103(a) as being obvious over Yamazaki, Shiomi et al., and Malinski et al. in view of Buttery et al.

**Claim Summary:** Claim 1 as clarified defines:

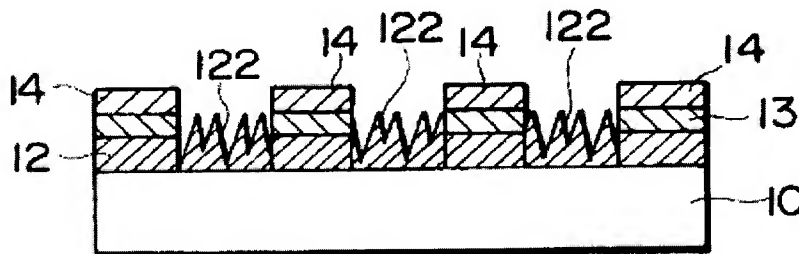
A microelectrode comprising:

a diamond layer formed from electrically non-conducting diamond and containing one or more pins or projections of electrically conducting diamond extending at least partially through the layer of non-conducting diamond, *the pins presenting areas of electrically conducting diamond and a contact surface or surfaces which can be connected to an external circuit.* [Emphasis added.]

Support for the emphasized features is found in Applicants' specification on pages 12 and 13 and Figure 5.

The claimed invention is directed to a microelectrode which has a diamond layer formed from electrically non-conducting diamond and containing one or more pins or projections of electrically conducting diamond extending *at least partially through the layer of non-conducting diamond*. The pins present areas of electrically conducting diamond. These areas provide, for example, analysis surfaces for an electrochemical cell. The pins provide a surface or surface through which there can be contact to an external circuit.

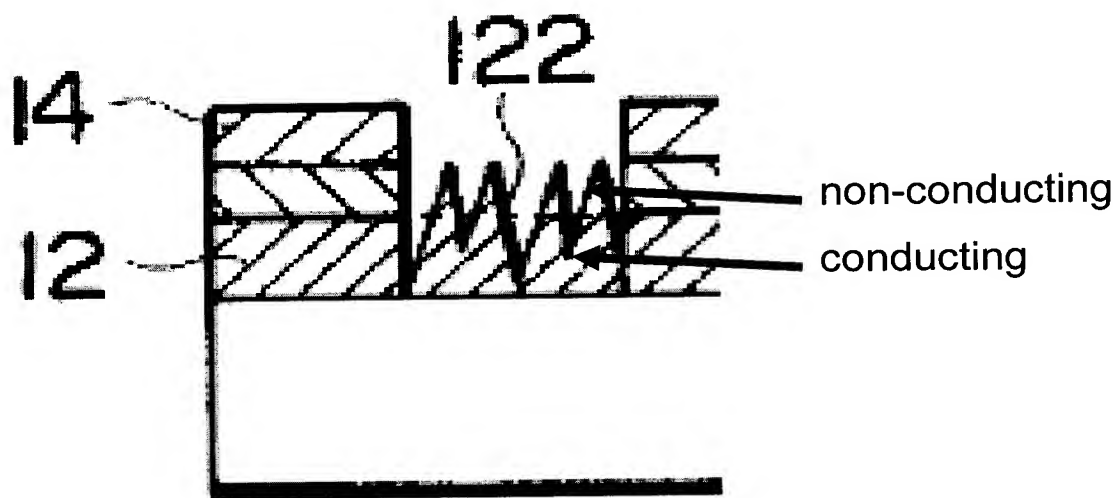
**Art Deficiencies:** The device of Shiomi is a field emission device designed to emit electrons. The Examiner points to the device of Figure 2, particularly Figure 2D, the fabrication of which is described in Example 1. Figure 2D of Shiomi is reproduced below:



The device of Figure 2D includes a layer of non-conducting diamond 13 on a layer of conducting diamond 12. Figure 2D of Shiomi does not disclose or suggest projections of electrically conducting diamond extending *at least partially through the layer of non-conducting diamond*. Rather, in Figure 2D of Shiomi, the electrically conducting diamond 12 is underneath the non-conducting diamond 13. For example, electron emission portions 122 in Shiomi are created by etching, using a process which selectively etches internal defects in the diamond (see column 7, lines 35-37), through openings in the patterned layer

14. The etching leaves portions 122 which have a spike shape, the lower portion of which is conducting diamond and the upper portion of which is non-conducting diamond.

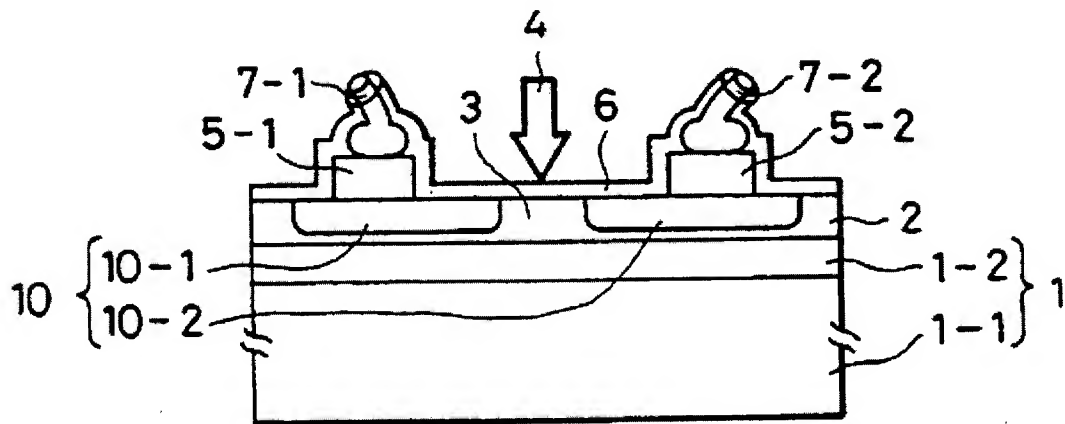
Figure 2D does not illustrate this point clearly. Attached is annotated copy of Figure 2D enlarged and marked to show the non-conducting and conducting portions of each spike or portion 122. It can be seen from this sketch that the sections of the spikes or portions 122 are themselves made of non-conducting diamond. This must be so for the etching is selective and thus will etch some of layer 13 (or layer 12) leaving a residue of the same layer. Thus, the Shiomi device does not disclose or suggest one or more pins or projections of electrically conducting diamond extending at least partially through the layer of non-conducting diamond, as claimed. Further, the Examiner will appreciate that this configuration in the Shiomi device cannot function as a microelectrode.



M.P.E.P. § 2131 requires for anticipation that each and every feature of the claimed invention must be shown in as complete detail as is contained in the claim. Hence, given these deficiencies in Shiomi, Claim 1 is not anticipated by Shiomi.

The device of Yamazaki is a thermistor and is not a microelectrode. The Examiner relies on Figure 1C of Yamazaki. The device of Figure 1C shows islands of conducting diamond 10-1 and 10-2 in a layer of non-conducting diamond 2. Figure 1C of Yamazaki is reproduced below.

FIG. 1(C)



The Examiner will appreciate that the islands of conducting diamond 10-1 and 10-2 are isolated in the non-conducting diamond 2. The islands do not have “a contact surface or surfaces which can be connected to an external circuit,” as defined in Claim 1. Moreover, the Yamazaki thermistor cannot function as a microelectrode.

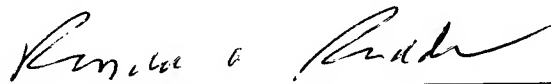
Once again, M.P.E.P. § 2131 requires for anticipation that each and every feature of the claimed invention must be shown in as complete detail as is contained in the claim. Hence, given these deficiencies in Yamazaki, Claim 1 is not anticipated by Yamazaki.

Thus, Claim 1 and the claims dependent therefrom are believed to be in condition for allowance.

**Conclusion:** In view of the present amendment and in light of the above discussion, the outstanding grounds for rejection are believed to have been overcome. The application as amended herewith is believed to be in condition for formal allowance. An early and favorable action to that effect is respectfully requested.

Respectfully submitted,

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